The Mediaeval

and

The True Modern Spirit

in

Education

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Or that the past will always win,
A glory from its being far.

From art, from nature, from the schools,
Let random influences glance.

THE MEDIAEVAL

AND

THE TRUE MODERN SPIRIT

IN

EDUCATION

A THESIS

ON EDUCATION, WITH A FEW TRUISMS, COMMENTARIES AND SUGGESTIONS ON THE PRINCETON CURRICULUM, BY A LOYAL AND GRATEFUL ALUMNUS, TWENTY-FIVE YEARS AFTER GRADUATION.

Henry Fairfield Osborn

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The Mediæval and the True Modern Spirit in Education.

Written at a distance and some time after severing direct connection with the University these observations may gain in perspective while they may lose in exact reflection of present conditions. Wholly impersonal, they represent the result of years of experience, also of questioning students in different colleges, especially those of Princeton, Columbia, Yale, and Harvard universities. They purposely omit all reference to questions of moral and physical education. In course of comment on education as it is at Princeton an original attempt is made to develop a fundamental theory of education which it is hoped may be of some service. This paper is therefore partly critical partly constructive.

Let us love the Alma Mater, but not blindly.

It is the part of loyalty to an institution to recognize its defects and its merits, not to publish abroad, but to discuss them in the inner circle of friends, who may differ as to means but are absolutely united as to the end to be attained. This, all would agree, is to keep Princeton to the front in religion, letters, science and the service of the State.

As regards the public and educational life of the

country, we must take more account of changed conditions; of the fact that we are no longer preparing largely for the ministry, although strong influence should be exerted in this direction, and that while law and medicine still make large demands on our graduates, new objects of education are rapidly springing up. There is the public service in city, state and nation, the call for college-trained men in the government scientific bureaus, in the colonies; the large demand for teachers incidental to the rapid extension of educational institutions throughout the country, and for men trained in literary lines. Is Princeton doing her full share in entering men into these lists? This could only be fairly answered by careful statistical inquiry, but we must not forget that Princeton once held a leading position in the national government and that this is no longer the case. At present only a single graduate holds a highly influential government office. In state service, especially in New Jersey, Delaware and Pennsylvania, some of our graduates are prominent. Among great lists of appointees recently made under the reform government of the city of New York, Princeton graduates were conspicuous by their absence. In the filling of hundreds of legal and other offices under the new government but two Princeton men were chosen. Both, it is true, have achieved conspicuous success.

It appears that Princeton is not in as close touch as the third college of the country should be with modern life in any of its manifold phases. As a college every historical and natural advantage is hers

and it is the college that we have in mind in this paper.

Symptoms of the lack of public appreciation of the Princeton educational system are found in the lack of gifts to the University outside of those which come from the large and ever-increasing circle of loyal alumni. Our curriculum certainly does not inspire public interest or confidence. It has the general reputation of being excessively conservative. It classes us with all the smaller colleges and separates us from all the larger universities of the country and the world. There is, moreover, a profound dissatisfaction on the part of many of the most thoughtful of our alumni with its present stationary or rather reactionary condition. The writer's own thoughts were turned several years ago in this direction by the casual remark of an alumnus, who said: "Say what you please of ——— one can get an education there."

One might pronounce with equal or greater stricture and more or less fairly on other colleges but we shall gain more at Princeton by cultivating a warm admiration for the strong and good qualities of our rivals and a judicial sense of our own vulnerable points.

If our present college course is not accomplishing what it should, let us reconstruct it; if other colleges are rising to modern conditions, let us frankly admire, not for imitation, but to build a system of our own as effective or more so.

AN ILL-BALANCED CURRICULUM.

It is first to be noted that during the past twenty-five years the Freshman and Sophomore curricula have stood practically still, the new riches of the University having been chiefly poured into the Junior and Senior years, with the result of a total lack of balance in the course as a whole. As a fact, we have a two-year mediæval and a two-year modern curriculum, largely unconnected; and the question is, whether one is really preparing for the other.

This will, however, be made more clear after we have considered the relations of School, Freshman and Sophomore life, the nature of the mediæval and of the true modern spirit in education.

Unattractive to the Schools.—As related to the schools, two head masters, both loyal alumni and exceptionally able educators, have recently expressed their dissatisfaction with the lack of attraction in our early curriculum. If one's advice were asked in the case of a student with strong natural science tastes, could one conscientiously recommend the early Princeton curriculum? Take a single instance. Mr. A. (a man of classical and philosophical training) has a son of fifteen, of strong scientific tastes, preparing for Princeton. The boy is now reading Virgil and a Greek reader, and at eighteen will be ready to enter. At this time Princeton will demand of Mr. A., "We know more about this matter than you do; the mind of your boy still needs training in the classics, he must continue until he is twenty. According to our theory of education one third of your son's entire

life should be given to those studies. He will then be admitted to the observational work of science." What Oxford would demand of the same student will be seen on another page.

I am not holding a brief for President Eliot's policy as a whole, in general I am opposed to it; in some respects it has set back the cause of education; mere change has been mistaken for progress; there is a misdirection of fine intellectual material; there is a lack of sequence and logical development of studies which is theoretically and practically at fault, especially prejudicial to scientific development, and against which many Harvard professors are strongly outspoken.

But when we candidly apply to the two systems, as actually operating, the criterion of results we find that: Harvard graduates in every sphere of human activity are as successful as or more successful than Princeton graduates; and we must certainly judge a system rather by its results than by its theoretical value.

Whatever one may think of this freedom of studies in general, it has certainly been *masterly* in its attractiveness to the schools and to a very large proportion of parents of culture but without college affiliations throughout the country. By raising the standard a few months above that of Princeton and Yale, Harvard has attracted the cleverest and most able students; by enabling freshmen to hear some of the ablest men in the University she holds out a further inducement. It is a great mistake to suppose that sub-freshmen are influenced only by social

and athletic considerations in their choice of a college. The thoughtless and backward students may be; the more thoughtful ones are attracted strongly by the nature of the work offered in the earlier years. From personal questioning in cases where I have endeavored to exert some influence, I have been met with the objection, "I prefer the academic course of training, I want to study a certain subject. If I go to Princeton I shall have to wait until I am twenty or twenty-one years of age before I shall be allowed to study it." Altogether, the Harvard system holds out the strongest inducement to high class entering students; the freshman is placed under an adviser as to choice of subjects, and the range of subjects recommends itself to young men of eighteen or nineteen. I can positively testify to the immediate intellectual stimulus resulting from this system. "What do you think of the Harvard elective system?" I asked a prominent New England school teacher. "I do not know about the system as a whole," he replied, "but I know that most of our boys become interested and get to work as soon as they reach there."

As regards the early introduction of scientific courses, some of my old colleagues would consider it revolutionary, and I myself would not consider it at all advisable to open a general course in geology to freshmen; yet one hears the popular course under Professor Shaler spoken of as one of the most stimulating. Last year, on the occasion of a competitive examination for the U. S. Geological Survey, thirteen of the candidates were former auditors of Shaler.

Granted that we had an ideal educational system at Princeton, we would still be handicapped if we did not secure our share of the best intellectual stock in the country and in the schools. A course of study which would attract the most cultivated parents as well as the brightest sons would furnish a larger share of the promising new material out of which strong men are developed. The most systematic and strenuous efforts should be made to establish and maintain among schoolmasters and pupils throughout the country the highest regard and respect for our courses in the freshman and sophomore years.

So much is said of system and organization in these pages that counter emphasis must be laid at the outset on *men*, that is, on the personality of teachers. Better a great teacher than a great system; one McCosh or one Brackett than ten committees on pedagogy. If there is one feature above others in which President Eliot has served Harvard it is in his selection of stimulating men, and in his elimination of men who have proved themselves incapable and unfit. The first duty of a college is not to its professors but to its students.

Negative Influence of the first two Years.— Can we maintain that the Princeton students entering for the B.A. degree become interested and get to work as soon as they enter Princeton? Do they find much to interest them? Four hours Greek, four hours Latin, four hours mathematics, and one paltry hour in the mother tongue, recently increased to two. Where are the riches of modern literature, the

splendid achievements of science, the refining influences of art, the contact with public service? From all this inspiring vision the freshman is debarred and the sophomore gets but a partial glimpse. Here and there, some able classical and mathematical teachers in the earlier years arouse a wave of interest, as brilliant teachers can do in any subject; but it was my own experience twenty-five years ago and that of all freshmen whom I have been interrogating for some years past, that the general effect of the first two years is deadening.

In theory, the freshmen are drinking in classical culture and acquiring a rare and unusual mental training; in practice, or as a matter of fact, they are going through drudgery, through a continuation of school boy life, through a daily mill of dullness to those who have no predisposition for languages or mathematics; guided by translations, seldom taught actually to use the language, as the students of English public schools and universities are, but chiefly to translate and parse. Even if this theory of mental training were a good one, we cannot claim that it has been fairly applied, because of the lack of experience and adequate training on the part of many of the younger teachers. At the present time many of the divisions are partly in the hands of men who have not received the doctor's degree. Owing to the unequal distribution of the riches of the University, the chief wealth of new teaching blood has gone to benefit the junior and senior years. The statement can be made without reservation that on the average the freshman in 1873 had a higher general

standard of instruction than the freshman in 1902; the teachers in 1873, Cross, Halsey, Eddy, Hart, all being men of experience. After the grind of the freshman year the sophomore returns, knowing the real freedom of college life—for his seventh or eighth year of classical disciplinary work counting his school life. Small wonder that the sophomore has become a 'problem.' He enjoys a little more latitude, logic, history, a limited amount of chemistry and physics, English in very limited quantities, Latin, Greek and mathematics in abundance.

Some of the results, so far as one can observe the *average* student, are skepticism as to the merits of work, indifference to education as a principle, lack of culture, general Philistinism, ignorance both of books and of current affairs, illiteracy in spelling and expression, absorption in athletic sports. The official attitude of the college towards the freshmen as an inferior order of beings intellectually is, to a certain extent, responsible for the general attitude of the undergraduate body towards this class, and has led to the creation, one cannot say revival, of certain boyish customs. Freshmen were treated more as men in 1873 than they are in 1902. There is a resulting immaturity, not only in manner and in conduct but in intellectual attitude; but a *more serious indictment against these two years is that it has failed to prepare the men for the modern training of the junior and senior years.*

WHAT IS MEDIÆVALISM?

As Huxley observes: "The mediæval university looked backwards; it professed to be a storehouse of old knowledge, and except in the way of dialectic cobweb-spinning, its professors had nothing to do with novelties. Of the historical and physical (natural) sciences, of criticism and laboratory practice it knew nothing. Oral teaching was of supreme importance on account of the cost and rarity of manuscripts. The modern university looks forward, and is a factory of new knowledge; its professors have to be at the top of the wave of progress. Research and criticism must be the breath of their nostrils; laboratory work the main business of the scientific student; books his main helpers. . . . The cardinal fact in the university question appears to me to be this: That the student to whose wants the mediæval university was adjusted, looked to the past and sought book learning, while the modern looks to the future and seeks the knowledge of things." *

Mediævalism in education is a general attitude of mind toward both the subjects, the methods and the ends. It is the receptive and critical rather than the productive. It should not for a moment be confused with classicism. The relatively non-productive Romans were partially mediævalists, but the highly productive Greeks were in no sense mediævalists. Socrates, Plato and Aristotle were eminently men of their period, or moderns, in education, as we learn from their frequently reiterated views. If these great men in their discourses on education had recommended the youth of Greece to devote ten of the formative years of their lives first to the Mycenæan

* "Life and Letters," vol. 2, 328–329.

language and culture, and second to the Egyptian language and culture, then those who maintain that our modern youth should devote the entire formative period of their minds to ancient languages might rightfully claim to be classicists. The true classicist in education would therefore appear to be one who follows most closely the highest classical models in education, and these are certainly the models set by the Greeks, both in their methods and in their results.

Plato, as a classic model observes: "We next come to arithmetic, geometry and astronomy . . . all citizens shall learn the rudiments of these sciences, not because of the necessities of practical life but because these are endowments belonging to the divine nature. *By a good method the teaching of these sciences may be made attractive and interesting; so that no force may be required to compel youth to learn.*"* We thus find the highest classical authority for the modern ideals of education, and that the Greeks, while anticipating us in the sciences, gave ethics, philosophy, literature and science their proper balance and proportion. Their system resulted in the most remarkable achievements in the way of production the world has ever known.

This is in contrast to the practice of the mediæval

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* Compulsory education is for the school perhaps, certainly not for the college or university. A course which does not interest and attract is a failure. A teacher who year after year fails to interest, attract or inspire, has mistaken his profession and should take up some other calling. Stimulus and interest, thoroughness and sequence in the course of study, may be taken as the methods of handling pupils as set forth by Plato, while the subjects he recommended were exactly those of our junior and senior curricula.

educators, in the renaissance of classical learning, whose maxim was to study books, not nature; it never occurred to the mediæval compilers to examine the things about them, the birds, the fishes, flowers, and leaves, or even human society; their entire time was occupied in studying and discussing what Aristotle and Pliny had to say about these matters.

This is the receptive rather than productive, the centripetal rather than centrifugal spirit in education and in learning.

THE TRUE MODERN SPIRIT.

One may ask at this point, what are these Greek-modern ideals? What is the true modern spirit, inculcated by Greek masters? Have we gained a fuller perception and clearer analysis of the ideals and aims of education? It is doubtful. In the smoke and confusion about elective and required courses the fallacy has got abroad that *modern subjects* constitute the essence of the true modern spirit of education. Nothing could be further from the truth. When we consider how entirely diverse the subjects are on which the minds of great men have been bred down the ages, we realize that it is not the subject but the *spirit*. I can fancy a modern language taught in a most intensely mediæval fashion, and an ancient language under a different type of teacher, as the source of the most modern spirit.

If we would teach a youth, we may still safely follow Socrates' rule that the less we think for him and the more he thinks for himself the better. We want

to turn out *thinkers* both in the theoretical and practical spheres of life; men whose action is controlled by reflection.

In this endeavor to produce thinkers and men, back of all curricula, of all adjustments of required and elective studies, we must constantly set before us the true modern spirit of education, namely the *inculcation of the forces which underlie the intellectual and moral progress of the individual and of the race.*

Write it down on the tables of the heart and mind that these are: First, knowledge of right and wrong, and the sense of beauty and fitness; second, knowledge of tradition, of books, of the experience of other men in the present and previous generations; third, knowledge by direct and personal observation of men and nature; fourth, the truths which may be derived from this knowledge by processes of reasoning; fifth, the benefits which may be conferred on mankind by conveying these truths through powers of expression in speaking and writing; sixth, and finally as the highest goal of education, the production of new ideas out of the study of past experience and out of natural experiment. These are the six grand forces of modern life and therefore of education, which are as essential to the perfectly educated man as the six great systems of organs in the human body are to the man of ideal physical development. They are also reflected in six great natural gifts or constitutional predispositions of men, one having the gift for truth, another for beauty, another for learning, another for observation, another for reasoning,

another for expression, another for creative production. The rare man, the genius, is he who combines the largest number of these gifts in the largest measure.

The first four forces are purely receptive, or centripetal. Ethics and æsthetics, book learning, observation and reasoning may all be pursued in course of a monastic existence, totally without benefit to one's fellow men. The last two forces, expression and production, are the centrifugal applications of knowledge to service, and it is here that education reaches its highest point.

The six great forces in education.	*The final end and object of education.*
Ethical and æsthetic.	Training
Learning.	
Observation.	and
Reasoning.	
Expression.	
Production.	Service.

Granting, for the time, that ideal education in its last analysis comes down to the cultivation of these forces, the mediæval and the Greek-modern theories may now be contrasted in respect to each.

I. TRUTH AND BEAUTY.

"Again, many of you think it is not only a waste of time, but a positive sin, to read novels and poetry and general literature, to cultivate in any way the imagination, to take an interest in painting or sculpture or music. You have yet

to learn that although parrots and other imitative animals can get on without imagination, there is no such thing in existence as an unimaginative scientific man. That you have some imagination and individuality is evidenced by your differentiation from all other students of science classes; but have you these well developed, and have you those other qualities which are absolutely necessary for the success of a scientific worker? Imagination is far and away the most important; but there are also judgment and common sense, and the love of truth and the power of self-sacrifice, which seem always to accompany the pursuit of science." *

The divine order of truth and beauty is at the foundation of all things and forms the soul of education. It is aside from the present discussion whether ethics and æsthetics were more of less appreciated by mediævalists than by moderns. Without truth as the central principle education is fruitless. In the sphere of æsthetic cultivation we are on more debatable ground, as will be readily seen from the following comparison. French environment from childhood abounds in æsthetic cultivation while perhaps less insistent on the element of truth. German, English and American, in short, Teutonic education is deficient in the element of beauty, while perhaps more insistent on the element of truth. Teutonic education is, on the whole, of greater service to the world. The combination of these elements is the ideal to be sought by the educator. The inculcation of this combination is through religion, nature, classical and modern literature, and art.

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* Inaugural address of Prof. John Perry, *Nature*, October 23, 1902, p. 645.

II. LEARNING.

"With this close hold upon practical life and this constant interest in the politics of the world, especially of England and the United States, no one could be less like that cloistered student who is commonly taken as the typical man of learning. But Lord Action was a miracle of learning. Of the sciences of Nature and their practical applications in the arts he had indeed no more knowledge than any cultivated man of the world is expected to possess. But of all the so-called 'human subjects' his mastery was unequalled. Learning was the business of his life. He was gifted with a singularly tenacious memory. . . . The passion for acquiring knowledge which his German education had fostered ended by becoming a snare for him, because it checked his productive powers. It absorbed so much of his time that little was left for literary composition. It made him think that he could not write on a subject till he had read everything, or nearly everything, that others had written about it."*

Mediævalism was distinctively the period of *book learning*. The survival of mediævalism is the survival of faith in this single factor of education as of paramount value and importance. This is merely the centripetal *tradition* factor which must precede the centrifugal *production* factor.

General information, knowledge of tradition and history as set forth in books and booklore, of literature and science, represent what we gain from what other men have done for us. The late Lord Acton

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* Special correspondent of the *Evening Post*, London, June 23, 1902. The *Evening Post*, Friday, July 18, 1902.

may be cited as a modern mediævalist of the highest type, of vast learning, of limited production ; the lesson of his life is extremely impressive.

By way of contrast to Acton, Victor Hugo, Balzac, Browning, Tennyson, our own Fiske may be cited as endowed with both factors, with stores of learning which they were ready to pour into expression, into the conversations, debates, and discussions of their men and women or into pages of history. Darwin while at Cambridge neglected sources of book knowledge ; but was led back to book learning after he had become attracted to science by observation and found that it was necessary to draw from the recorded observations of others ; and he became a man more learned in books than any scientific man of his generation, a fine illustration, by the way, of the principle that the first aim of the teacher or the institution should be *to enlist the spirit of the student in some subject ; once enlisted the value and necessity of correlated knowledge or learning becomes apparent.* Book learning must occupy a very large amount of time and it is of course absurd to depreciate book learning in education, as is done in some faddist schools, in early college specialization, or in the extreme application of the laboratory system. The point is, that in the mind of every teacher and in the educational theory of the institution there should be a clear realization of the exact position which it occupies in relation to the other forces of education.

III. OBSERVATION.

"You know much of what has been done, but have you the power to discover, to add to the world's knowledge? Your knowledge has been derived from books and lectures; you have now to learn that a week in the laboratory, during which you seem to crawl, during which for examination purposes you do less than in reading ten lines of a text-book, is really of more value to your scientific education than a month's hard reading. This is almost unbelievable to you who are such adepts in passing examinations, yet it is quite true. Lectures and lessons have spoon-fed you until now; lectures and lessons will in future teach you to feed yourselves." *

"But how willingly I would as a poet exchange some of this lumbering, ponderous, helpless knowledge of books, for some experience of life and man." †

Here is the keynote of the transition from book learning to original observation of men, of facts and things, of nature, as the only absolute sources of philosophical knowledge. This gift of observation, quick and keen in children, probably inherited from our ancestral life where powers of observation were factors in survival, is studiously ignored in the mediæval system of education. It is the fountain from which has flowed all our knowledge of the universe —with its incalculable benefits to man—not the least of which is his loftiness of purpose and spirit. The world holds its own by learning, it moves by observation.

* From abstract of inaugural address of Prof. John Perry, *Nature*, October 23, 1902, p. 645.

† Elizabeth Barrett Browning to Robert Browning, March 20, 1845.

The college is primarily responsible for the persistent warping, curbing and discouraging of this God-given faculty even in the home and school life, because it ignores observation in its entrance requirements, excepting in so far as some recent concessions have been made to it in two of the sciences. Here I may quote from a noteworthy recent address by the head master of one of the most successful colleges in England. "A school preparation should be of a kind which will foster the desire and develop the power to overcome difficulties; it should give self-reliance and sufficient knowledge of scientific principles to enable the pupil in after life to understand changing conditions and see their trend. Above all, school work should encourage the spirit of inquiry which finds delight in making new observations and experiments with whatever resources are available. The principle upon which Humboldt constructed Prussian education a century ago was: whatever we wish to see characteristic of our nation we must first implant in our schools. Assuredly if we would prepare our scholars for life, the supreme intellectual preparation is found in methods which evoke the faculty, the originality, the mental resourcefulness of our pupils. It is for us to see that the subjects and methods of teaching in our schools are such as to promote the development of these qualities, for national progress depends upon them."

The college, again, is responsible if, when young men are entrusted to its care, it does not at once recognize that this grandest of human faculties must be continuously cultivated and encouraged; if it

does not recognize that what we observe is less vital than that we observe at all. Food for observation is what is needed; not always the same food; neither is it necessarily in the scientific sphere; it may be in the poetical, literary, classical, social, or political, as most admirably put by Montaigne:

"This great world which some do yet multiply as several species under one genus, is the mirror wherein we are to behold ourselves, to be able to know ourselves as we ought to do in true bias. In short, I would have this to be the book my young gentleman should study with the most attention. . . .

"Truth and reason are common to every one, and are no more his who spake them first, than his who speaks them after: 'tis no more according to Plato, than according to me, since both he and I equally see and understand them. Bees cull their several sweets from this flower and that blossom, here and there where they find them, but themselves afterwards make the honey, which is all and purely their own, and no more thyme and marjoram: so the several fragments he borrows from others, he will transform and shuffle together to compile a work that shall be absolutely his own; that is to say, his judgment, his instruction, labour and study, tend to nothing else but to form that. He is not obliged to discover whence he got the materials, that have assisted him, but only to produce what he has himself done with them. . . .

"The boy we would breed has a great deal less time to spare; he owes but the first fifteen or sixteen years of his life to education; the remainder is due to action. Let us, therefore, employ that short time in necessary instruction."*

*Montaigne, Vol. I, pp. 177, 187, 195.

Observation in the experience of every observer becomes one of the strongest motive powers or incentives to book learning.

Here we may refer to the lack of sequence between the mediæval and the modern years of Princeton education, to what has been styled above an "ill-balanced curriculum." One can never forget the exhilaration of entrance into the junior year. For men of all but exclusively linguistic or mathematical tastes it is like escape from a monastery. The college bell summons to philosophy, psychology, political science, physics, astronomy! But as the student proceeds he discovers two fatal defects in himself: first, his previous training has not fitted him for original observational sciences; second, he has no foundation of learning for his secondary sciences, no thoroughly fundamental or practical knowledge of chemistry or physics, such as he requires for his geology or biology. Having devoted eight years of his life to Latin and Greek including more than half of his freshman and sophomore years, he finds that in an ill-balanced curriculum little account has been taken of the precious value of *time* in relation to subjects and masters in education. On translations under inexperienced teachers time has been fairly lavished and now for want of time he hurries through a grand subject, like astronomy, under a grand master, at such a rate of speed that the higher educational value of the subject is lost and only the lower *informational* value remains.*

* To this haste rather than to any lack of ability and the inspiration on the part of our two great teachers of physics and astronomy must be attributed the fact that Princeton has not turned more men into these subjects.

Thus, quite unconsciously as a rule, the student experiences the fact that the mediæval education is not articulated with the modern, and has not prepared him for it; he never realizes until later in life if at all what he has lost by the non-cultivation of his original powers of observation through the long period beginning in school life and running through early college life.

IV. REASONING.

The previous forces, beauty and truth, book learning, observation, do not imply reasoning power. I have in mind two most gifted observers, profound students and prolific writers, who were totally devoid of logic. The courses most calculated to develop this power are logic, philosophy, the history of the sciences — more especially where taught by personal contact and discussion between master and student. In all this sphere the Princeton curriculum is theoretically strong. We breed sound thinkers. *The practical cultivation of reasoning power by the inductive-deductive method must be separately developed by the criticism of the teacher in every branch of original work.*

Thus far we have considered the centripetal or receptive factors in education, although observation and reasoning are on the border land. We now pass to the purely centrifugal factors, the altruistic ends of education.

V. EXPRESSION.

"For my part, I venture to doubt the wisdom of attempting to mould one's style by any other process than that of striving after the clear and forcible expression of definite conceptions, in which process the Glassian precept, 'First catch your definite conceptions,' is probably the most difficult to obey. But still, I mark among distinguished contemporary speakers and writers of English, saturated with antiquity, not a few to whom, it seems to me, the study of Hobbes might have taught dignity, of Swift concision and clearness, of Goldsmith and Defoe simplicity."

The gist of Huxley's famous sentence quoted above is that *ideas, practice, and the native literature are the three chief forces* in the cultivation of style.

The mediæval spirit has always been characterized by prejudice to the mother tongue. Formerly it was seen in the writing of the Bible and all works of science in Latin, now it is seen in the reliance upon Latin and Greek as adequate in the cultivation of the art of expression. It is one of the most remarkable features of modern times that this prejudice still survives and is expressed in our college curricula.

The English system at Princeton is certainly introduced too late; as part of the great preparation for the work of the junior and senior years English should receive far more attention and time in the freshmen and sophomore years. The writer's attention was called to the ill-balanced condition of the English courses by an excellent and conscientious student who spoke of the English in the freshman year as regarded by the students as a joke, namely,

as an hour's exercise with a text-book, never prepared beforehand, nor seriously considered by any one. This is a positive retrogression from our curriculum of a quarter century back. Not many years ago, a professor from another university came to Princeton to learn our methods. Since that time Harvard, Yale and Columbia have all introduced extensive and effective English training in the freshman year.

Princeton still holds back partly from inadequate endowment but partly also from principle. One of the writer's classical friends remarked: "I trust these new ideas (of English education) will not be rapidly introduced, and that my son, at least, will find his English education in the classics, which are adequate to give him all the necessary powers of style." On this point it may be said that the classics as generally taught in American colleges fail to have the productive and constructive value in expression which is afforded by the English system. In England there is a constant interchange of classical and English expression, and style is thereby cultivated and developed. In America, on the other hand, the chief process in classical education is translation, parsing, translation. As the college entrance examination approaches translation increases in intensity; not even a pretence can be made that English style is thereby cultivated; and the chief argument for the classical system must be abandoned if this system is not properly applied. On the other hand, the 'productive' methods of classical training are of unquestioned advantage in style, both to the man of letters and of science.

In this day, when the chief exponents of English style, Huxley with no early classical training, and Tyndall of scientific education, stand shoulder to shoulder as masters of style with Maurice and Goldwin Smith, of classical education; when Darwin and Galton are models of simplicity and clearness, it surely cannot be maintained that there is any monopolistic classical road for the acquisition of style. The writer has in mind a young naturalist of no classical training whatever who expresses himself in charming style and is in great demand as a writer for such a critical journal as the *Evening Post.*

VI. PRODUCTION.

"Produce! Produce!" exclaims Teufelsdröckh in *Sartor Resartus.* "Were it but the pitifullest infinitesimal fraction of a product, produce it, in God's name! 'Tis the utmost thou hast in thee: out with it, then."

This is the final goal of the educational system, which should be prepared for by arousing the true modern spirit in every course in school and college. Practically applied during the senior year by the preparation of an original thesis on a subject of election, it represents the distinctive feature of the university or graduate school.

Most men are born consumers, few are gifted with the power or desire to produce. Yet the educator should bear this centrifugal factor in mind in every phase of education, in every subject, in every course. In English it is the original theme; in Classics it is

the turning of English into Latin or Greek; it is the original rather than the memorizing task; in mathematics it is the original problem; in science it is the original experiment, however simple—in short, it is the outflow from the student's brain instead of the inflow which constitutes the rudimentary steps in the training for production.

The graduate school is the school of production. Princeton is abundantly supplied with men capable of directing graduate students in various lines of productive and original work; and it is expected that the present organization of the graduate school will prove to be effective in bringing all the forces at present latent and potential in the University to bear in this crowning work. A larger endowment is, of course, greatly desired; but the thing for Princeton is first to show what she can do with her present men and her present resources. When we consider that in the little Princeton of 1877 with only 400 students, seventeen men, including all the ablest men of the graduating class and some others, remained for distinctively university work, and that out of this number a very considerable proportion have achieved success, it is obvious that from the three-fold larger classes now graduating a still larger body of men may be attracted to return.

The ideal university course now is for the American graduate to devote not less than three years to his doctorate, one of which, at least, shall be spent abroad, returning for the final year of research and for the degree from his own university.

RECONSTRUCTION OF THE CURRICULUM.

The inevitable conclusion is that the Princeton curriculum requires thorough reconstruction rather than alteration or repair. It must be considered *de novo* and adapted to modern conditions. The rigidity of our system is similar to that which drove Darwin to idle away his days at Cambridge, and frightened Rowland, the greatest physicist America has produced, away from college altogether. Are such minds worth arresting and interesting if good fortune sends them among us? Our present system ignores the profound constitutional or hereditary intellectual predispositions or differences which exist among young men, and one of the first objects of a curriculum *should be to fasten the interest of the student at some point for some subject, and use this as a lever to lead him to take a more serious view of other subjects.* Every man is born to do one thing better than any other; the earlier he discovers it the better it may be for his intellectual salvation.

Princeton must progress with the rest of the educational world. In the past quarter century we have stood absolutely still so far as any radical reconstruction is concerned, and now occupy a unique and isolated position among the larger universities of the world. The old and conservative colleges of Oxford and Cambridge have abandoned certain principles for which we are still standing. One would expect to see in the current magazines and reviews the

friends of the Princeton system, if there be such, taking the offensive and holding their ground; but one looks in vain for articles of this character.

Few of us appreciate how conservative and reactionary our position is. Here is a part of a letter regarding a young student entering a 'natural science' course at Oxford, which is in bright modern contrast to the mediæval conditions the same student would face were he to desire to enter with us: "The other Balliol scholarships are equally the first things in their respective categories, and it is interesting from the point of view of heredity that 4 of them are now held by sons of Oxford resident teachers: 2 in classics, 1 in modern history, and now 1 in natural science. Ted will go back to Rugby till August, and come up here next October when he will be just over 19. That is I think just the right age to begin University life. He will in the meantime chiefly study modern languages, especially German, as he has *finished his Greek and Latin two years ago* [that is at 17] and passed the 'certificate examination' which is accepted instead of all classics up here."

Altered Position of the Classics in Education.— We should totally abandon the claim that the classics have superior 'mind training' value or that they alone best conduce to a 'pure English style'— and substitute the claims of the true modern spirit that as *perfected studies* the classics develop systematic thinking; by familiarizing us with the greatest people of any age they give us a sense of perspective and proportion for our lives and times; that they tend to broad culture, and that they may be har-

moniously and advantageously combined with classical history, art, archæology and philosophy.

"No doubt both Greek and Latin are very great ornaments, and of very great use but we buy them too dear." These words of Montaigne exactly fit the situation. College education in the classics now extends from the eighteenth to the twentieth year. Years ago it extended from the seventeenth to the nineteenth year. It is extremely important to keep in mind the advanced age of entrance, which has been brought about partly by the increased requirements, partly by the generally freer social conditions in our colleges which lead parents to hesitate to send their sons at the earlier age. Thus has arisen a greater disproportion between mediæval education and modern education than existed previously. In other words, there has been a positive retrogression in this regard, an actual increase in amount of time in proportion to the whole life period which is given to these subjects. Summing up the whole linguistic training as compared with training in other subjects, or any other group of subjects, up to the time of graduation, say at the twenty-first year, we find that it compares in about the same ratio as a cathedral to a village chapel. No cultivated man can fail to appreciate classical education : on the contrary, modern science, and more especially the biological sciences, all benefit by classical preparation. The question is not, therefore, as the value of the classics, but as to whether the classics are so valuable as to warrant their absorbing four fifths of the whole educational period, and nearly one third of one's life-

time. Exactly the same criticism applies to over-mathematics.

'Required' classics beyond the freshman year is an anachronism. Let the student learn what the ancient authors, taught in the culture spirit, represent; if they still do not appeal to him, nothing is gained by continuing the high protective tariff another year. It is this high protection which has been so fatal to the life of these studies. From the sophomore year on let the classical and mathematical teachers compete for students with the humanists and the scientists.

Princeton, thanks to the new library, to the seminar system, and to the accession of teachers of talent and enthusiasm, is now enjoying a classical revival in the best sense. There is a rare opportunity in the future development of the Art School to make a new departure in classical education. We would rejoice to see a beautiful building exclusively devoted to classical teaching, connected with the galleries of the Art School and the monuments of Greek and Roman antiquity. In other words, archæological should go hand in hand with linguistic teaching. There is now a totally unscientific divorce between the Greco-Roman archæology, as taught in the junior and senior years, and the purely linguistic work of the freshman and sophomore years. This is another illustration of the lack of sequence and correlation in our present courses.

Theory of Reconstruction.—For the early years of the course we would first advocate in general that a true proportion be established between the Classics,

English, Modern Languages, Mathematics, Physics and Chemistry, Logic, History, Government (citizenship and service of the state); as if the educational problem were to be considered *de novo*, and we had an opportunity to build up a curriculum not upon tradition and custom, but upon the merits of various subjects and upon their relative value in cultivating the six great forces of education as above described.

The two fundamental sciences should be taught, not in a technical spirit, nor even as groundwork for serious research, but in a felicitous welding of hard thinking, of information, of philosophy, of culture, and glimpses into the marvels of the cosmos. Such a lecturer as Brackett gave us a standard in 1875. A well known man of letters still speaks of this course as the most cultivating of all his four years.

The second step, partly a financial one, is to restore the *per capita* cost of education. There is no inherent reason why it should cost several times as much to educate a junior or a senior as it does to educate a freshman or a sophomore; the under classmen are paying as large or even larger total fees than the upper classmen. They are not receiving their share of the benefits of these fees, but these benefits are crowded into the two upper years where there is such a profusion of courses that no man can take advantage of them all. In other words, there should be such a redistribution of the educational riches of the University that the freshman and sophomore years should be as full of inspiration as the junior and senior years.

As soon as a student enters Princeton he should

feel a strong and refreshing contrast to school life in the wider intellectual horizon ; in the continuation of classical work on the culture rather than the 'cram' basis, in the immediate stimulus of English, in the glimpse into political and national life, and if he elects, into the world of science also through a course in physics.

The third object is the establishment of sequence in the various lines of work, such a sequence that the freshman and sophomore work will naturally lead in the various lines into the junior and senior work, and prepare men for it. The Chinese wall which now divides these four years into 'mediæval' and 'modern' is wholly unnatural, and should be replaced by a sequence of studies.

The fourth object is the recognition that the natural sciences and the humanities contribute alike to modern liberal culture; that the sciences supply far the best media of original observation, of reasoning from cause to effect, of induction and generalization. This is their specific educational value.

Fifth, that laboratory instruction or direct observation in the sciences is the method most effective, although for larger classes it involves expenditure which will make it almost prohibitive at present.

Sixth, that a deliberate and thorough course, with sufficient time for collateral reading, reflection and discussion, has more educational value than a large number of hurried courses.

Seventh, that personal contact, discussion and deliberation between students and teachers is quite as potent and in some cases even more potent than lecture room contact.

In the writer's opinion, the best method of bringing about a sequence of studies in the first two years is the institution of the group system, which has been successfully tried at Johns Hopkins, Bryn Mawr, and Chicago, and is under consideration elsewhere. This system evades the extreme disadvantages of the free range of election, and combines the advantages of the elective and the required systems; that is, after the student has made a general choice, the faculty decides what is the proper correlation and sequence of studies, what should precede and what should follow; while still allowing for absolute freedom of choice in the later years.

Science pursued as a technical profession belongs by itself, and the ultimate destiny of the School of Science is to divide into two parts, one part leading to the technical professions, the other more closely correlated with the work of liberal education. The divorce between academic and general (that is, non-professional) scientific studies is totally unnatural; it is another survival of mediævalism, namely, the notion that the training of the mind through the works and thoughts and language of man is superior to training through the works of nature. All nature studies pursued for their own sake belong in the same category as classical, philosophical and literary studies. All scientific studies pursued with reference to technical professions, or, in other words, all applied sciences, belong in another class. The tendency of recent progress has been clearly to recognize this distinction; and Princeton should rank with the leaders in this inevitable educational reform.

Fallacy of the Three-Year Course Argument.—It is to the interest of all education that the American college should preserve its integrity, intermediate between the school and the university. The three-year question promises soon to be an economic one of the first importance because it will soon affect seriously the flow of student life and patronage. It may be met only by moderating the age of entrance. The fallacy of the argument for a three-year course consists in the fact that when we look back at the whole trend of American education in the last quarter century it is obvious that the present cause of this movement is the increased age of entrance to college which, in turn, is partly the natural evolution of the human race in the prolongation of childhood and boyhood, partly the increased entrance requirements. The arithmetic of the matter is this: from one to two years have been added to school life, and to equalize matters it is now proposed to subtract one year from college life, one whole year of loss in the culture period of education as the net result. The most sanguine schoolmaster does not claim that the school period, terminating with the dreaded two years' cram for the entrance examination, is a culture period. Similarly, university or graduate work, while embracing and developing a larger culture, is distinctively *special* even when proceeding along lines of three great subjects. For example, the graduate may pursue physics, chemistry and biology, as his two minors and a major. These will require his undivided attention and energy for at least three years, and whatever culture he gains is that which always

comes from the more profound, original, and productive investigation of any subject.

The college course must, therefore, stand distinctively for culture, not in the restricted sense but in the broad sense of the cultivation of knowledge, of book learning, reasoning, observation of men and things, expression, and the firm establishment of those high ethical and æsthetic standards which lend to all future specialization the absolutely essential elements of truth, beauty and service. Neither does the college course of four years afford more than sufficient time to prepare for university work in any of the humanistic or natural sciences. On the contrary, these sciences demand at least two years of special preparation before the student can advantageously enter work for the degree of Ph.D.

The wise exception as regards the four-year course is naturally that students preparing for the professions, ministry, law, medicine, may devote their fourth year to the fundamental studies and work of those professions. As long as Princeton lacks either a law or medical school, it will be extremely difficult to make this fourth-year preparatory work valid in another university, such as Columbia, for example; but I believe that the desirability of securing Princeton graduates in the professional schools of Columbia, Harvard and other universities, will make it possible to bring about some reciprocal arrangement whereby Princeton senior work will receive the same credit as Columbia or Harvard senior work.

April, 1902

POSTSCRIPT.

At the head of the university is one who embodies the true modern spirit in his education, his personality, his ideals, his production. This spirit is reverence for the past, appreciation of the present, readiness for the future. Under his leadership trustees, faculty, alumni and students will unite with mind, heart and means to restore and maintain the historic prestige of Princeton as a national influence in every worthy branch of human activity.

April, 1903.

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